

In certain localities much determined effort has been made toward the eradication of this species, but its complete extermination will be long delayed if, indeed, it ever takes place.

TEXAS AGRICULTURAL EXPERIMENT STATION.

CONTRIBUTIONS FROM THE GRAY HERBARIUM OF
HARVARD UNIVERSITY—NO. LXXXVII

I. *LIGUSTICUM SCOTHICUM* OF THE NORTH ATLANTIC
AND OF THE NORTH PACIFIC

M. L. FERNALD

(Plates 193 and 194)

THE Scotch Lovage, *Ligusticum scothicum* L., is generally treated as having two widely separated areas of distribution, one on the North Atlantic: the coasts of Scandinavia, the British Isles and Iceland at the east and of southern Greenland, Labrador, eastern Canada, New England and southeastern New York at the west; the other on the North Pacific: southern Alaska and Kamtchatka to Japan. The two areas are, obviously, quite isolated; and, whenever I have had for identification material from the North Pacific, I have at first failed to recognize it as *Ligusticum scothicum*, for in its small and compact convex-topped flowering umbels it has always seemed very different from the plant I have intimately known for forty years on the shores from Long Island to Labrador, the latter plant having the primary umbels much broader and flat-topped. From time to time I have undertaken a closer comparison of the plants of these two remote areas but, owing to lack of mature fruit of the plant of the North Pacific, have as regularly abandoned the study. Recently, however, realizing that the great student of the Kamtchatkan flora, Dr. Eric Hultén of the Riksmuseum at Stockholm, must have before him abundant material of both plants, I referred the question to him. My attempt thus to delegate the problem, however, proved a "boomerang"; Dr. Hultén responded by supplying me with excellent fruiting material from Kamtchatka and from Japan, thus encouraging me to look further into the question. The result of this renewed study is the proposal of

LIGUSTICUM Hultenii, n. sp. (t.), *L. scothicum* simulans; foliolis

foliorum inferiorum subrotundatis vel late rhomboideis 1–7 cm. longis crenato-dentatis, venulis plerumque confluentibus areolas clausas formantibus; umbellis hemisphaericis ad anthesin convexis primariis 3–5.5(–7) cm. latis; fructu anguste oblongo 8–10 mm. longo 2–2.5 mm. lato.—Alaska and Kamtchatka to Japan. ALASKA: Fort St. Michael, Norton Sound, 1865–66, *H. M. Bannister*; False Pass, Alaska Peninsula, August 3, 1925, *O. J. Murie*, no. 67; Lake Iliamna region, 1902, *Gorman*, no. 114; Ocean Cape, Yakutat Bay, July 18, 1892, *Funston*, no. 70; grassy edge of woods, Prince of Wales Island, August 8, 1915, *Walker*, no. 916a; Sitka, *Mertens*; shore, Sitka, August 8, 1907, *Cowles*, no. 1089; Ilinlink, Unalaska, September, 1871, *M. W. Harrington*; Unalaska, July 25, 1891, *J. M. Macoun*; on moisture-bathed rock or in moist lowlands along streams, Unalaska, July 6, 1907, *Van Dyke*, no. 7; moist places, Makushin Bay, Unalaska, July 14, 1907, *Van Dyke*, no. 169; Amchitka Island, July 25, 1873, *Dall*; Nazan Bay, Atka, July 26, 1907, *Van Dyke*, no. 238 (TYPE in Gray Herb.); Akutan, August 21, 1907, *Van Dyke*, no. 325. KAMTCHATKA: Petropavlovsk, 1853–56, *C. Wright*, August 17, 1920, *Hultén*, no. 932. JAPAN: Kokodate, 1859, *Wilford*, 1861, *Maximowicz*, July 10, 1890, *Miyabe & Tokubuchi*; Sapporo, July 7, 1903, *Arimoto*.

Named for Dr. Eric Hultén, whose critical studies of the flora of Kamtchatka are clearing the identities of plants of many other sections of the northern hemisphere.

Superficially, *Ligusticum Hultenii* is at once separated from well-developed *L. scothicum* by the smaller and more rounded crenate-dentate leaflets of the lower leaves and the very small and convex umbels. The lower leaves of *L. scothicum* of shores of the North Atlantic have the leaflets usually narrower, more cuneate at base, more cleft and commonly acute to acuminate and more serrate-dentate (though in small northern forms they may be crenate), and the lower leaflets are often 1 (sometimes even 1.5) dm. long; and the primary umbels of *L. scothicum* are broader, in anthesis 4–10 cm. broad and essentially flat on top. The fruit of *E. Hultenii* is slightly but appreciably narrower, the mature merocarps 2–2.5 mm. wide, while in *L. scothicum* they are 2.5–4 mm. broad. Probably the most positive difference in the foliage is found in the venation of the leaflets of the lower leaves: in *L. scothicum* (Plate —) the larger veinlets are confluent, thus forming areolae, but a large proportion of the ultimate ones have free ends; in *L. Hultenii* (Plate —) most of the veinlets of the lower leaves are confluent, forming areolae. This difference is clearly brought out in the micro-photographs kindly prepared by Mr. Albert N. Steward.

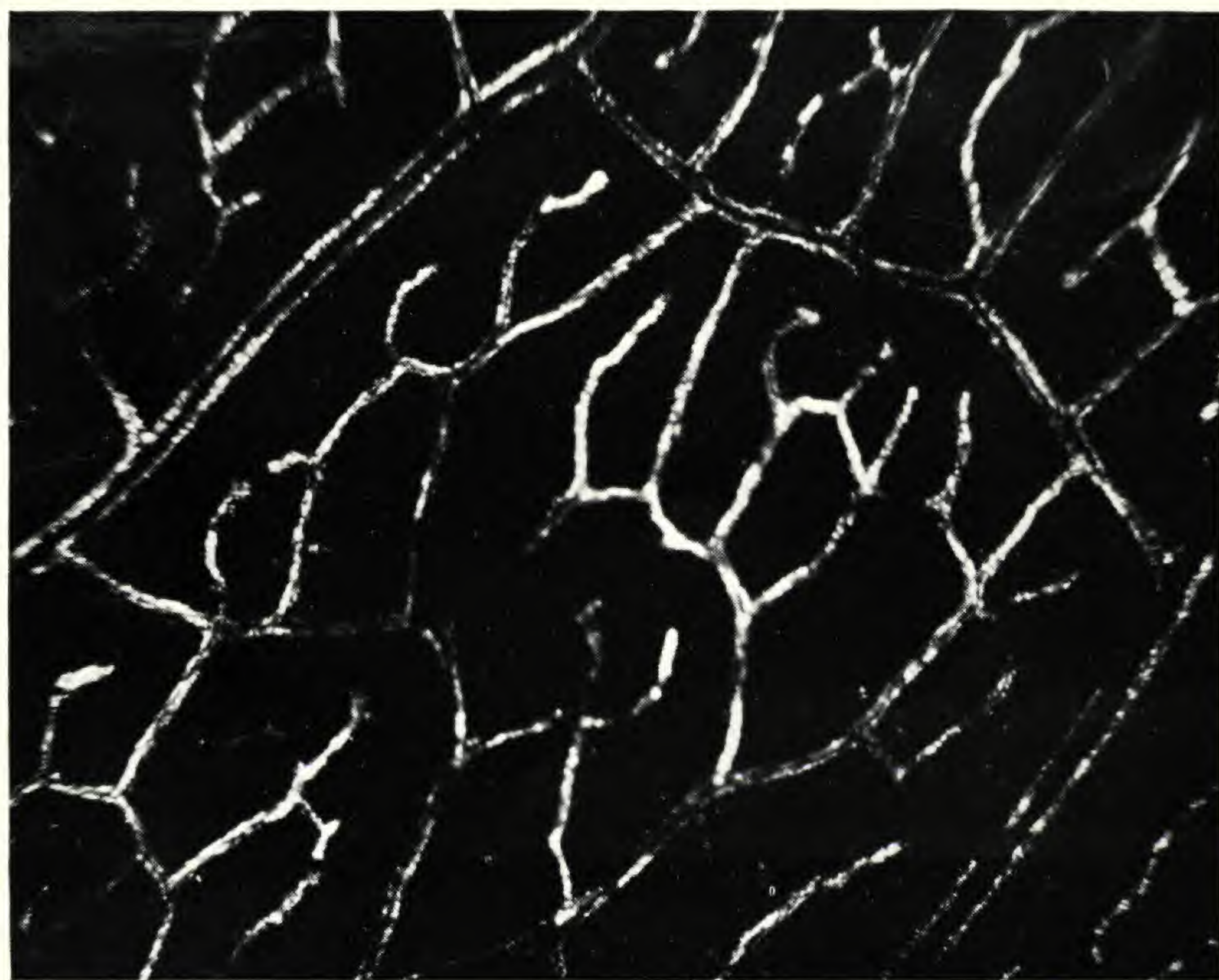


Photo. by A. N. Steward.

VENATION OF BASAL LEAFLET OF *LIGUSTICUM SCOTHICUM*
(UPPER FIG. $\times 3$, LOWER FIG. $\times 20$)

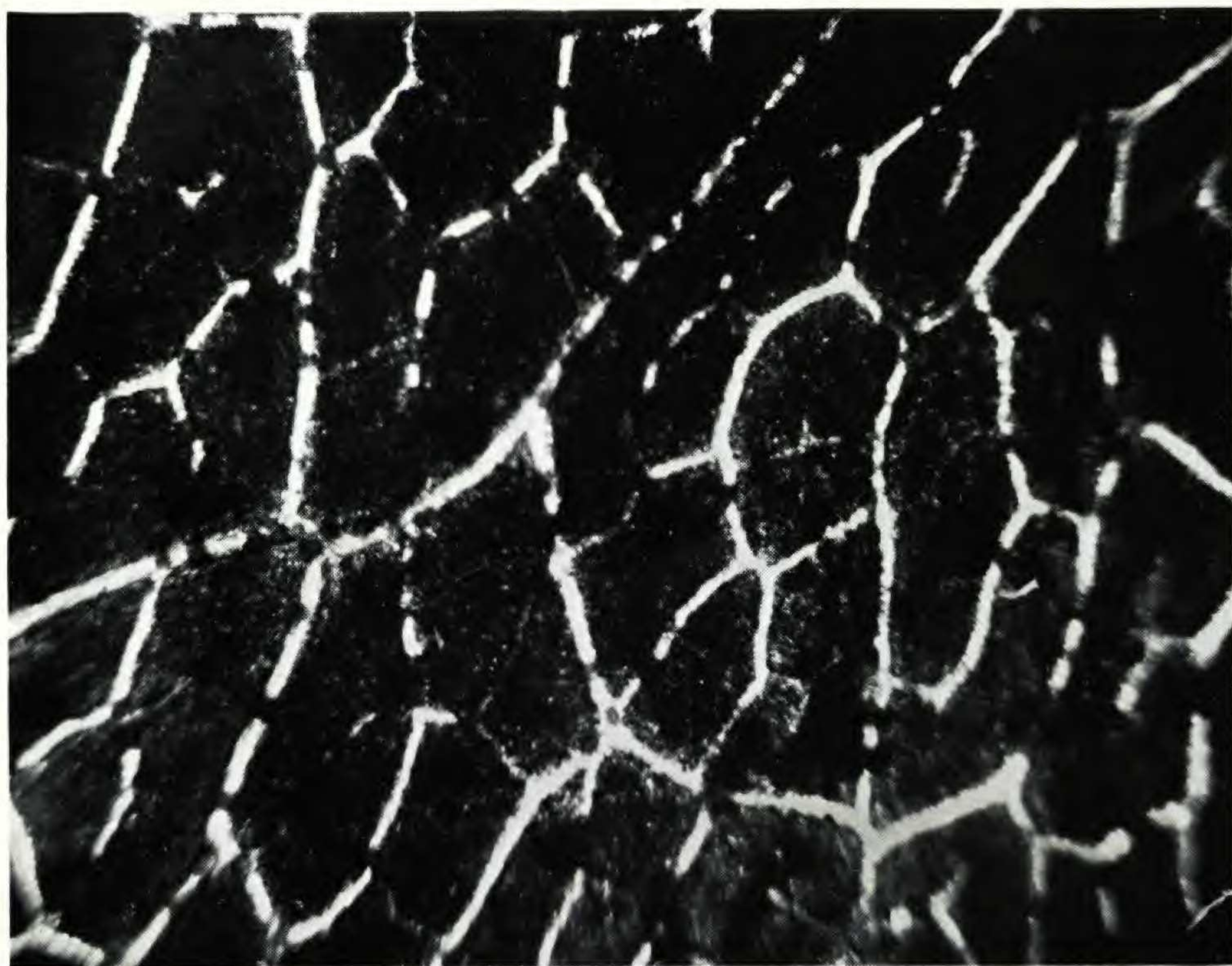
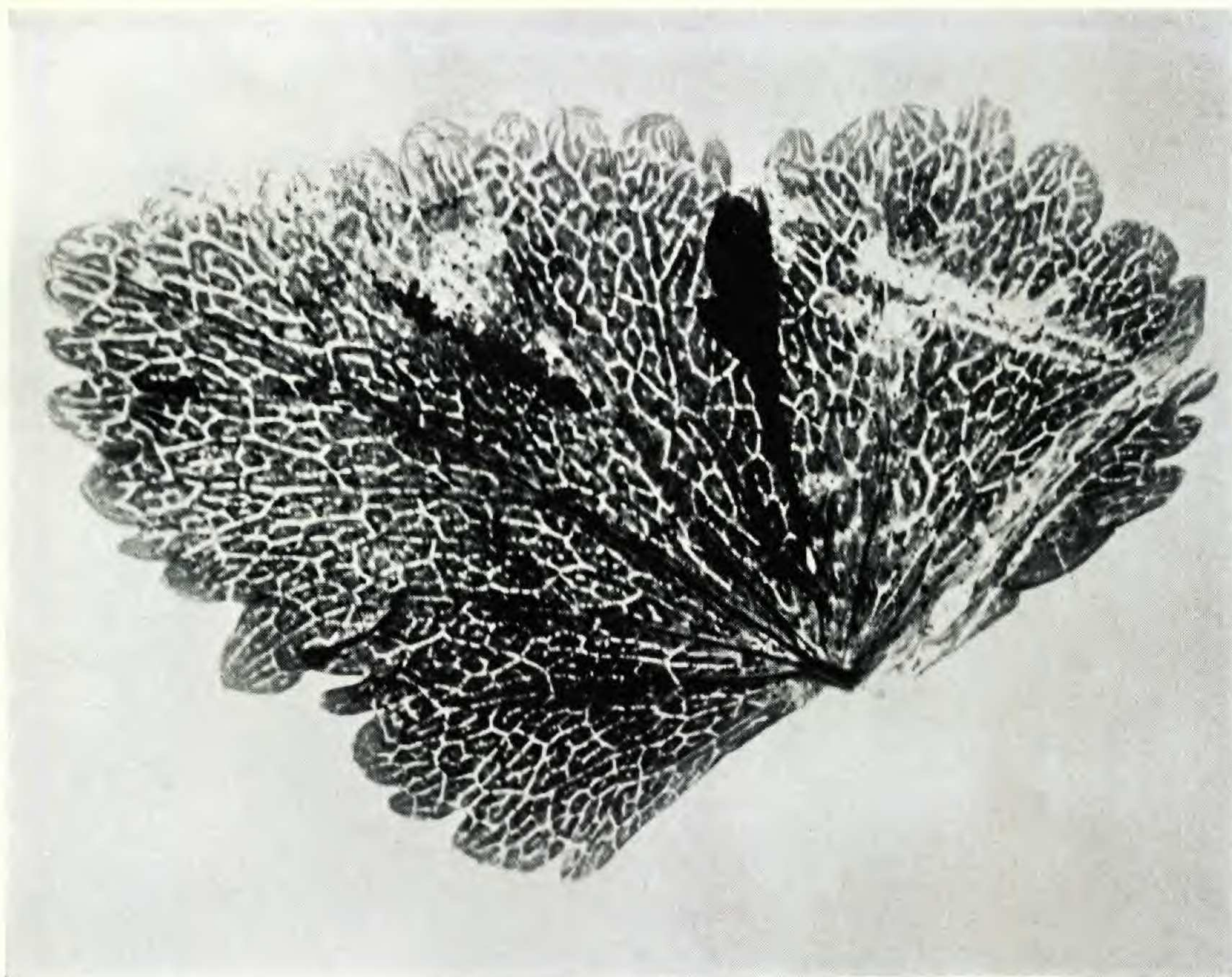


Photo. by A. N. Steward.

VENATION OF BASAL LEAFLET OF *LIGUSTICUM HULTENII*
(UPPER FIG. $\times 3$, LOWER FIG. $\times 20$)

EXPLANATION OF PLATES 193 and 194

PLATE 193, upper fig., basal leaflet of *LIGUSTICUM SCOTHICUM*, to show venation, $\times 3$; lower fig., venation $\times 20$. PLATE 194, upper fig., basal leaflet of *L. HULTENII*, to show venation, $\times 3$; lower fig., venation, $\times 20$.

II. *CAREX MACROCEPHALA* AND *C. ANTHERICOIDES*

M. L. FERNALD

DR. Charles W. Townsend sent me in November last a much battered "pocket specimen" of a grass-like plant which he had found "on a sand dune near Seaside Park, near Tom's River, New Jersey," with the additional information that "it was said to have spread rapidly over the dune, and that it was never planted there . . . The care-taker of the property thought it would be an excellent sand binder, which it appears to be, as it makes a close mat." The plant had nearly cylindric culms and no fruit, so, taking it upon casual inspection to be a grass, I sent half the material to Mrs. Agnes Chase for identification. In the absence of Mrs. Chase, the plant was examined by Mr. E. C. Leonard who has correctly identified it as *Carex macrocephala* Willd. of the sandy coast of eastern Asia, from eastern Kamtchatka, Sachalin Island and Japan to Shantung. It is apparently quite at home on the New Jersey sands, for Mr. J. R. Swallen of the Bureau of Plant Industry writes: "This is the second specimen that has been sent in from New Jersey."

Carex macrocephala is generally supposed to occur on the Pacific coast of North America, from southern Alaska to Oregon; but Dr. Townsend's material so closely matches the Asiatic specimens and so far departs from the fine series in the Gray Herbarium from the sands of British Columbia, Washington and Oregon that I have compared the two series with some care. It now becomes clear that the plant of western North America is a thoroughly distinct species, for more than a century wrongly identified with the Asiatic *C. macrocephala*. The American species is *C. ANTHERICOIDES* Presl., Rel. Haenk. 204 (1828), originally collected at Nootka Sound on Vancouver Island; and it is distinguished from the Asiatic by characters of the rootstock, lowest leaves, rosette-leaves, culm, scales, anthers and achenes. The original description by Willdenow of the Asiatic plant was meagre, but the very complete description of true *C. macrocephala* given by Regel¹ and beautifully illustrated by him may be compared

¹ Regel, Tent. Fl. Ussur. 164, t. xii. figs. 8-12 (1861).